

The whole sphere of transportation is ripe for photovoltaics. Indeed, railroads depend heavily on PV as a power source for control and safety in rail yards and elsewhere. Often this use is a function of economics, but often reliability is the rail industry's primary concern. And photovoltaics is nothing if not reliable.

Batteries are an integral part of many forms of transportation. But batteries have an inherent problem in that they self-discharge over time if they are not being used. To overcome this problem, the Detroit area national guard—which meets only every two weeks—has installed PV-powered trickle charge units to keep their batteries at a high state of charge.

Solar electric cars (charged with a PV system that sometimes also powers a residence or business) are an option appreciated by motorists whose daily needs can accommodate fairly short mileage.

Included in these photographs are various forms of highway transport, but also some useful 'aids to transport' which—with PV—help ensure our safety in an attractively economical trade-off.



▷ PV-lit highway signs such as this one constructed for the Florida Turnpike's District Traffic Operations, are commonly seen on the nation's highways. This application is particularly well suited to photovoltaics, because the cost of running traditional electric service under the road would be prohibitive. *[Photo courtesy Solar Outdoor Lighting]*



▽ When an over-height vehicle is on course to hit an upcoming bridge, a solar-powered detection system sets off several warning devices, including a large neon-lighted sign, two powerful arrow warning flashers, a bright flashing strobe light, and a large klaxon. This installation is for the New York Department of Transportation, provided by SEPCO™. The 200W system has a piggy-back box containing an inverter, which sends ac voltage 1500 feet down the highway to power the warning devices. *[Photos courtesy Solar Electric Power Company, Ltd. – SEPCO]*



▽ Portable units such as this one for speed control have long been a great application for photovoltaics. *[Photo courtesy Sandia National Laboratories]*



◁ This ground-mounted PV system serves as an electric refueling station for the Presidio National Park's electric vehicles. The system is also line-tied, so excess electricity is fed back to the utility. The refueling station is located in front of the Thoreau Center for Sustainability at the San Francisco park. *[Photo courtesy Altair Energy]*





△ Powered in part by PV, this vehicle demonstrates energy-efficient and environmentally sound public transportation. The PV array on the roof provides about one-fourth of the bus' daily power requirement. It runs at a top speed of 24 miles per hour. [Photo courtesy Foster and Partners, Richard Davies, photographer]

▷ Fresh fruits and vegetables are delivered to stores in the South East region of London in a solar-powered, refrigerated lorry. The unit, powered by PV panels on the vehicle's roof, was developed by Sainsbury's Supermarkets (Britain's oldest

major food retailing chain) in partnership with academic and commercial interests, to look at the potential for renewable energy in this application. After a couple of years' use, all reports indicate that the lorry serves this unique application quite well. [Photo courtesy Sainsbury's]



△ Here a 10 watt Solarex solar array helps with roadway safety. [Photo courtesy Atlantic Solar Products]

△ Twelve Solarex 60W modules power railroad signaling equipment in Western Montana. This type of remote application is a very common use of photovoltaics. [Photo courtesy Kyocera Solar, Inc.]

◁ A solar electric car that can travel 55 miles suits actor Ed Begley, Jr. just fine. His PV system fully electrifies his home and provides electricity for his converted Volkswagen Rabbit. According to the U.S. Department of Transportation, most trips taken by Americans are 40 miles or less. [Photo courtesy Ed Begley, Jr.]



△ The Virginia Department of Transportation uses photovoltaics to power their weigh-motion stations. Among other functions, this equipment sets the speed of traffic. This traffic monitoring station is powered by a 1,280 watt solar array. [Photo courtesy Atlantic Solar]

▽ North Carolina State University at Raleigh has a 1.6kW PV charging station. Here, one of its fleet, an S-10 electric truck. [Photo courtesy North Carolina Solar Center]

